

REMARKS/ARGUMENTS

**Claim Status**

Claims 1-5, 10-11 and 15-27 are pending in the present application. Claim 1 is currently amended and finds support in the specification; pg. 32 line 17 – pg. 33, line 19 and pgs. 37-42. Claim 19 is amended to be dependent on claim 1. Claim 27 is added and also finds support in the specification; pg. 32 line 17 – pg. 33, line 19 and pgs. 37-42. No new matter has been added.

Claims 15 and 19-20 are withdrawn pursuant to a previous restriction requirement. However, claims 15 and 19-20 are now dependent on claim 1. Accordingly, upon indication of allowable subject matter (i.e., claim 1), Applicants request rejoinder of claims 14 and 19-20 which incorporate all of the limitations of claim 1 (MPEP 821.04).

Applicants thank the Office for withdrawing the rejections of the claims as obvious over Shea in view of Matthews, Corriu, and Ogawa.

**Claim Rejections - 35 U.S.C. 103(a)**

Claims 1-5, 10 and 11 are rejected under 35 U.S.C. 103(a) as obvious over Shea (Chemistry of Materials, 1989, 1, pp. 572-574) in view of Bartl (Chem. Commun., 2002, pp. 2474-2475); claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being obvious over Shea in view of Bartl and further in view of Mashita (JP 2000-306669) and Corriu (Chem. Commun. 1996, 1845-1846); and claim 17 is rejected under 35 U.S.C. 103(a) as being obvious over Shea in view of Bartl and further in view of Ogawa (J. Am. Chem. Soc. 1994, 116, 7041-7942).

Claim 1 has been amended to recite that the luminescent material is present in the pores or adhered to the walls of the pores. The Office recognizes that none of the cited references disclose a mesoporous material in which a phosphorescent material is found in the

pores or adhered to the surface of the pores of the mesoporous material (*See* Official Action, pg. 4, para. 9). Thus, claim 1 is both novel and non-obvious over the cited references.

The present invention provides a mesoporous luminescent material having a pore diameter of 2.5 to 30 nm, comprising a polymer having a network structure sophisticatedly cross-linked on a basis of a backbone (-X-Si-O-) in which X is a fluorescence of phosphorescence organic molecule, and further comprises another luminescent compound which is present in the pores of the mesoporous material. The claimed mesoporous luminescent material of the present invention allows for the energy transfer from the fluorescence or phosphorescence organic molecule to the another luminescent compound (*See* Specification, pg. 32, lines 17- pg. 33, line 19). As a result, the light having a wavelength which differs from the original luminance wavelength of the fluorescence or phosphorescence organic molecule is emitted (*Id.*) Thus, multiple-colored luminescence becomes possible corresponding to a combination of the fluorescence or phosphorescence organic molecule and the another luminescent compound to be introduced (*See Id.* and pg. 37, lines 5- pg. 43, line 22).

In contrast, neither Shea or Bartl disclose a porous siloxane polymer which comprises another luminescent compound, wherein said compound is present in (1) the pores of the porous siloxane polymer or (2) adhered on the walls of the pores of the porous siloxane polymer. Specifically, the Office recognizes that Shea fails to disclose the presence of another luminescent compound (Official Action, pg. 5, para. 14). Furthermore, although Bartl discloses encapsulating rare earth material complexes in sol-gel derived composites, the rare earth (RE) materials are present in the mesostructured composite thin films obtained as RE-phenanthroline complexes (col. 1, para. 2). The mesostructured composite thin films are host matrices for the incorporation of insitu synthesized organic/rare-earth-ion complexes (col. 1, para. 1). Thus, it is apparent that the rare earth materials disclosed by Bartl are

neither present in the pores of the mesostructures thin film nor adhered to the walls of the pores of the mesostructured thin film.

The Examiner is reminded that MPEP 2142 states:

The legal concept of *prima facie* obviousness is a procedural tool of examination which applies broadly to all arts. It allocates who has the burden of going forward with production of evidence in each step of the examination process. See *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Saunders*, 444 F.2d 599, 170 USPQ 213 (CCPA 1971); *In re Tiffin*, 443 F.2d 394, 170 USPQ 88 (CCPA 1971), *amended*, 448 F.2d 791, 171 USPQ 294 (CCPA 1971); *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness. If, however, the examiner does produce a *prima facie* case, the burden of coming forward with evidence or arguments shifts to the applicant who may submit additional evidence of nonobviousness, such as comparative test data showing that the claimed invention possesses improved properties not expected by the prior art. The initial evaluation of *prima facie* obviousness thus relieves both the examiner and applicant from evaluating evidence beyond the prior art and the evidence in the specification as filed until the art has been shown to render obvious the claimed invention.

In the present application, the Examiner has not met this initial burden. Specifically, in the outstanding Office Action the Examiner has not established where in the cited references, and upon what basis, the artisan would envision a porous siloxane polymer which comprises another luminescent compound, wherein said compound is present in (1) the pores of the porous siloxane polymer or (2) adhered on the walls of the pores of the porous siloxane polymer. In turn, said references are insufficient to render obvious claim 1 and all claims dependent thereon. Applicants request withdrawal of these rejections.

With respect to the secondary references cited over the dependent claims, Applicants note that each of Mashita, Corriu and Ogawa fail to cure the above deficiencies of Shea and Bartl because they also fail to disclose a porous siloxane polymer which comprises another luminescent compound, wherein said compound is present in (1) the pores of the porous

siloxane polymer or (2) adhered on the walls of the pores of the porous siloxane polymer.

Withdrawal of these rejections are also requested.

Claims 1-5, 10, 11, 21, 22 and 24-26 are rejected under 35 U.S.C. 103(a) as being obvious over Loy (Chem. Rev. 1995, 95, 1431-1442) in view of Dunn (J. Mater. Chem. 1991, 1, 903-913) and Bartl; and claim 23 is rejected under 35 U.S.C. 103(a) as being obvious over Loy in view of Dunn and Bartl, and further in view of Jones (U.S. 6,682,810). Applicants traverse these rejections.

Neither Loy, Dunn or Jones disclose a porous siloxane polymer which comprises another luminescent compound, wherein said compound is present in the pores of the porous siloxane polymer or adhered on the walls of the pores of the porous siloxane polymer. Dunn discloses doping a sol-gel material with different organic molecules, such as fluorescent and phosphorous dopants, however Dunn does not disclose porous materials. Thus, Dunn cannot be relied upon for the disclosure of dopants present in *pores* of a porous material nor for dopants adhered to the walls of porous materials.

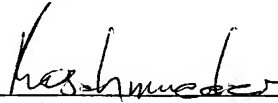
In view of the foregoing, Applicants maintain that the present claims are novel and non obvious and request withdrawal of all pending rejections.

**Conclusion**

For the reasons discussed above, Applicants submit that all now-pending claims are in condition for allowance. Applicants respectfully request the withdrawal of the rejections and passage of this case to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, L.L.P.



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Richard L. Treanor  
Attorney of Record  
Registration No. 36,379

Customer Number  
**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 07/09)

Stefan U. Koschmieder, Ph.D.  
Registration No. 50,238